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## Centralized content-based Web filtering and blocking: how far can it go?

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### Abstract:

To an organisation, centralized Internet filtering and blocking is very important. Educators and parents would like to block offensive materials from children. Companies also want to reduce the amount of work time that employees spend on non-productive Web surfing. Current blocking and filtering mechanisms can roughly be classified into two approaches: URL-based and content filtering. In the URL-based approach, a requested URL address is blocked if a **match** is found in the blocked **list**. However, keeping the **list** up-to-date is very difficult. In the content filtering approach, **matching** is often used. Its main problem is mis-blocking. Many desirable Web pages are blocked because some predefined **keywords** appear in their Web pages, though they have different meaning or context. There are suggestions for image, audio and video understanding in real-time content filtering. The delay time is also of great concern. In this paper, we investigate how far multimedia content analysis should go for Internet filtering and blocking. A set of guidelines for defining the heuristics used in real-time content analysis is also given. These heuristics not only have higher filtering accuracy than most multimedia retrieval techniques do, but they also have a comparable overhead to that of **keyword matching**. Our experience of deploying a pornography filtering system in high schools is also described. Experience from the system implementation and deployment is found to give a very good direction to the filtering and blocking of Web content.

**Index Terms:**

[Internet](#) [information analysis](#) [information resources](#) [multimedia systems](#) [real-time](#) [Internet filtering](#) [URL address blocking](#) [Web site blocking](#) [World Wide Web](#) [central filtering](#) [delay time](#) [filtering accuracy](#) [heuristics](#) [high schools](#) **keyword matching** [misblocking](#) [multimedia content analysis](#) [multimedia retrieval techniques](#) [nonproductive](#) [surfing](#) [offensive materials](#) [pornography](#) [real-time content filtering](#) [runtime overhead](#)

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